

## REMARKS

### I. PRELIMINARY REMARKS

Claims 1, 6-8, 10, 13, 17, 20 and 56 have been amended. Elected claim 9 and non-elected claims 35-49, 55 and 57 have been canceled. Claims 59-64 have been added. Claims 1-8, 10-34, 50-54, 56 and 58-64 remain in the application. Reexamination and reconsideration of the application, as amended, are respectfully requested.

Applicant notes with appreciation that the Examiner has indicated that claims 24-34 and 50-54 have been allowed and that claims 6, 7 and 13-23 would be allowable if re-written in independent form. As claims 6, 7, 13 (from which 14-16 depend), 17 (from which 18 and 19 depend) and 20 (from which 21-23 depend) have been rewritten in independent form, applicant respectfully submits that claims 6, 7 and 13-23 are in condition for allowance.<sup>1</sup>

### II. PRIOR ART REJECTIONS

#### A. The Rejections

Claims 1-5, 8-10, 56 and 58 have been rejected under 35 U.S.C. § 102 as being anticipated by the Bossel '288 patent. Claims 11 and 12 have been rejected under 35 U.S.C. § 103 as being unpatentable over the combined teachings of the Bossel '288 patent and the Patel '117 patent. As claim 9 has been canceled, it is respectfully submitted that the rejection thereof under 35 U.S.C. § 102 has been rendered moot. The rejections of the remaining claims under 35 U.S.C. §§ 102 and 103 are respectfully

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<sup>1</sup> With respect to the "statement of reasons for allowance" on page 6 of the Office Action, applicant notes for the record that the Statement of Reasons for Allowance "is not intended to necessarily state all the reasons for allowance or all the details why claims are allowed." [MPEP 1302.14.] Additionally, the inventions claimed in the present application respectively comprise various elements in combination. Applicant respectfully submits that the patentability of each invention derives from the claimed combination of elements defining that invention, viewed as a whole, rather than from the presence of any particular element (or elements) in the combination.

traversed with respect to the claims as amended above. Reconsideration thereof is respectfully requested.

**B. Discussion With Respect To Claims 1-5, 8, 10-12, 56 And 58**

Independent claim 1 is directed to a bipolar plate comprising, *inter alia*, "a body formed from a **doped semi-conductive material** having a first face adapted to contact an anode of a first fuel cell and a second face adapted to contact a cathode of a second fuel cell." Independent claim 56 is directed to a fuel cell stack with bipolar plates that each include "a body formed from a **doped semi-conductive material** having a first face adapted to contact the anode of a fuel cell and a second face adapted to contact the cathode of a fuel cell." Independent claim 58 is directed to an electronic device including the fuel cell stack defined by claim 56. The cited references fail to teach or suggest such combinations.

For example, although the Bossel '288 patent discloses a variety of bipolar plate configurations, none of the configurations include a body formed from a doped semiconductor material. More specifically, in embodiments 4 and 6, which are discussed in column 7, the Bossel '288 patent indicates that the bipolar plate may be formed from "the electrically conductive ceramic material silicon carbide." There is no mention whatsoever of doping the silicon carbide. To the contrary, doping is only discussed in the Bossel '288 patent in conjunction with the ceramic electrolyte (column 3, lines 22-23) and the oxidation resistant layer on the oxidation side of the bipolar plate (column 8, lines 11-14).

As the Bossel '288 patent fails to teach or suggest each and every aspect of the combination recited in independent claims 1, 56 and 58, applicant respectfully submits that claims 1-5, 8, 10, 56 and 58 are patentable thereover and that the rejection thereof under 35 U.S.C. § 102 should be withdrawn.

Turning to the rejection of claims 11 and 12 under 35 U.S.C. § 103, applicant respectfully submits that the Patel '117 patent, which has been cited for its purported teachings concerning reforming catalysts, fails to remedy the aforementioned deficiencies in the Bossel '288 patent with respect to independent claim 1. As such, claims 11 and 12 are patentable for at least the same reasons as claim 1 and the rejection of claims 11 and 12 under 35 U.S.C. § 103 should also be withdrawn.

### **III. NEWLY PRESENTED CLAIMS 59-64**

Newly presented independent claim 59 calls for a combination of elements comprising "a body formed from an undoped semi-conductive material with relatively high electrical conductivity at low temperatures, the body having a first face adapted to contact an anode of a first fuel cell and a second face adapted to contact a cathode of a second fuel cell, the first face including a first flow channel adapted to confine fuel fluids, and the second face including a second flow channel adapted to confine oxidizing fluids." It should be noted that the present specification discloses a variety of semi-conductive materials that, absent doping, have a relatively high electrical conductivity at low temperatures. [Page 6, lines 10-21.]

The cited references fail to teach or suggest the combination defined by independent claim 59. For example, silicon carbide, which is the undoped semi-conductive material disclosed in the Bossel '288 patent, has low electrical conductivity at low temperatures.<sup>2</sup> Applicant respectfully submits, therefore, that claims 59-64 are patentable thereover.

### **IV. CLOSING REMARKS**

In view of the foregoing, it is respectfully submitted that the claims in the application are in condition for allowance. Reexamination and reconsideration of the application, as amended, are respectfully requested. Allowance of the claims at an early date is courteously solicited.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is respectfully requested to call applicant's undersigned representative at (310) 563-1458 to discuss the steps necessary for placing the application in condition for allowance.

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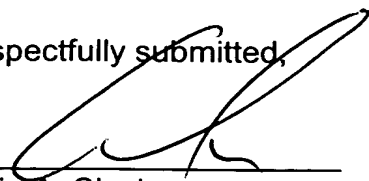
<sup>2</sup> Note Figure 1 and the associated discussion concerning carrier concentration, which is closely related to electrical conductivity, in Philip G. Neudeck et al., High-Temperature Electronics – A Role For Wide Bandgap Semiconductors?, Proceedings of the IEEE, Vol. 90, No. 6 (June 2002), pps. 1065-76. A copy of this paper is attached hereto as Exhibit 1.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 08-2025. Should such fees be associated with an extension of time, applicant respectfully requests that this paper be considered a petition therefor.

1/22/04  
Date

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